

Log M-383F



## National Transportation Safety Board

Washington, D.C. 20594

### Safety Recommendation

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Date: MAY 25 1993

In reply refer to: M-93-7 through -9

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Recreational boating accidents currently result in the greatest number of transportation fatalities annually after highway accidents. Although the number of fatal recreational boating accidents and fatalities decreased each year from 1985 to 1990, the U.S. Coast Guard indicates that in 1991, the number of fatalities from recreational boating accidents increased to 924 from the 865 fatalities reported in 1990. According to the Coast Guard, the fatality rate—the number of fatalities per 100,000 estimated boats—also increased slightly during the same period. Information from the American Red Cross indicates that about 355,000 persons are injured from recreational boating accidents annually and that more than 40 percent of these injuries require medical treatment beyond first aid. The U.S. Coast Guard estimates that in 1991 there were about 20 million recreational boats on the Nation's waterways, with the number increasing steadily each year. Not only has the number of recreational boats increased, but the speed at which many of these recreational boats operate has also increased. Because of the number of fatalities and injuries and because recreational boating activities can be expected to continue to increase, the Safety Board believes that efforts to improve safety are needed in recreational boating. The Safety Board, therefore, initiated a safety study of recreational boating accidents to determine the circumstances of these accidents and the countermeasures needed to prevent or reduce their number and severity.<sup>1</sup>

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<sup>1</sup> National Transportation Safety Board. 1993. Recreational boating safety. Safety Study NTSB/SS-93/01. Washington, DC.

For the study, the Safety Board reviewed U.S. Coast Guard data on recreational boating accidents that occurred between 1986 and 1991. The Safety Board also asked 18 States to provide copies of their 1991 fatal accident investigation reports, including witness statements, local investigation reports, and written narratives of the accidents. The Safety Board received 407 fatal accident reports, about 52 percent of the 779 fatal boating accidents that occurred nationally in 1991; 478 persons died in these accidents, about 52 percent of the 924 persons who died in boating accidents nationally in 1991.

### **Alcohol Involvement in Recreational Boating**

In its 1983 study on the role of alcohol/drugs in recreational boating accidents, the Safety Board concluded that as many as 35 to 38 percent of the fatalities in the recreational boating accidents studied were "legally drunk" at the generally accepted blood alcohol concentration (BAC) of 0.10 percent. Prior to that time, boating while intoxicated (BWI) had not gained national attention as a serious safety issue, and only three States (Arizona, Louisiana, and Maryland) had statutes that specifically addressed BWI. As a result of its 1983 study, the Board recommended that the various States and the District of Columbia undertake legislative initiatives to complete a solid framework to address BWI. In short, the three elements of the Board's safety recommendations called on the various States to:

- Establish a defined level of intoxication to strengthen and improve State marine safety programs to handle alcohol-involved incidents and accidents. (M-83-76)
- Provide for a chemical test of blood, breath, or urine if a recreational boating operator is suspected of being intoxicated. (M-83-77)
- Require toxicological tests of recreational boating fatalities. (M-83-78)

The Safety Board also issued a safety recommendation (M-83-73) to the National Association of State Boating Law Administrators (NASBLA) to work with the States and to develop a model enforcement program that would include a defined level of intoxication and toxicological and chemical testing requirements. Although it is illegal in all States to operate a vessel under the influence, 37 States and 2 Territories have passed and/or strengthened BWI laws since 1983. Three States had some type of law prior to 1983. Although the laws vary from State to State, the majority of States define an illegal blood alcohol concentration standard. Some States define behavioral standards in addition to a blood alcohol concentration; some States specify field test method, and several States have instituted implied consent provisions.

Defining the level of intoxication, conducting chemical tests if a recreational boater is suspected of being intoxicated, and requiring toxicological testing in the event of a fatality have enabled States to document more accurately the extent of alcohol use in recreational boating than they were able to do a decade ago. The Safety Board continues to believe that documenting the extent of the problem is a necessary first step before States can determine the appropriate countermeasures. The Safety Board further believes that all three of the legislative provisions outlined above are necessary to achieve an overall effective program. However, some States have defined the level of intoxication in terms of an illegal blood alcohol concentration but have not adopted a legislative provision allowing a chemical test of blood or urine if a recreational operator is suspected of being intoxicated. If enforcement officials are unable to conduct a chemical test, the extent of the alcohol involvement in recreational boating cannot be accurately determined nor can an upward or downward trend be determined. Other States have attempted to curb alcohol use in recreational boating through various programs but have yet to adopt legislative provisions to define the level of intoxication or to allow for a chemical test. Actions taken by enforcement officials through programs that lack legislative backing are less likely to be effective. Therefore, the Safety Board believes that the remaining States that have not yet enacted the legislative provisions outlined above should do so immediately.

The accident data provided by the States suggest that additional BWI legislation may be warranted. Of the 451 operators who were involved in fatal accidents, BAC tests were not conducted on 344 (76 percent). The Safety Board is concerned with the high number of recreational boat operators involved in fatal accidents that are not tested chemically for alcohol and believes that to understand more accurately the effect of alcohol on recreational boating activities, all recreational boat operators involved in fatal accidents should be chemically tested for alcohol. Although some States have enacted legislation to require a chemical test of blood and/or urine if a recreational boater is the operator of a boat involved in a fatal accident, the Safety Board believes that all States should enact such legislation. The Safety Board also believes that NASBLA should urge its association members to seek such legislative action in their respective States. Although the model enforcement program called for in Safety Recommendation M-83-73 was never developed, the Safety Board is aware that the NASBLA has worked closely with the States in the last 10 years to enact legislation outlined in Safety Recommendations M-83-76 through -78. Consequently, Safety Recommendation M-83-73 is being classified "Closed—Acceptable Action/Superseded" as a result of the new recommendation being issued to the NASBLA in this letter.

## Use of Personal Flotation Devices

Of the 478 fatalities that occurred in the accidents, 351 were reported by the States to be the result of drowning and 89 were due to traumatic injuries.<sup>2</sup> Of the 351 persons who drowned, use/nonuse of PFDs was known for 331 persons; 50 (15 percent) of these persons wore PFDs; 281 (85 percent) did not wear PFDs.

A detailed review of the 50 State-reported "drownings" in which the victims were wearing a PFD suggests that cold water exposure (hypothermia) may have been a factor in the cause of death in 23 cases. The review further revealed that in 10 cases, the victims were caught under water; in 4 cases, the victims were probably unconscious; in 1 case, the PFD was ripped off the victim; in 4 cases, the PFDs were not being worn properly; and in 8 cases, the circumstances of the drowning and the role of the PFD were not known or not documented. Thus, in at least 84 percent of the drownings in which the victim was wearing a PFD, there is a reason for the victim drowning that is not attributed to the failure of the PFD.

A review of the 281 State-reported "drownings" in which the victims were not wearing a PFD suggests that in 15 percent of the drownings (43 drownings) there were factors involved that may not have been influenced by the wearing of a PFD. The cause of death in 32 of the 43 drownings was probably exposure to cold water (hypothermia) rather than drowning; in 9 drownings, the victims were caught under water; and in 2 drownings, the victims were probably unconscious. Therefore, as many as 238 persons (85 percent of the drownings) may have survived had they been wearing a PFD.

There were 51 children under the age of 12 on board the accident vessels.<sup>3</sup> Fifteen of these 51 children were fatally injured: 2 died from traumatic injuries, 12 drowned, and the cause of death for 1 victim was not known because the body was never recovered. Of the 12 children who drowned, it was documented that 5 were wearing a PFD and 7 were not.<sup>4</sup> Information provided by the officers who responded

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<sup>2</sup> Subsequent information obtained from the States indicates that for the remaining 38 fatalities, 35 bodies were never recovered and the cause of death could not be accurately determined; 1 fatality was believed to have been caused by a pre-existing medical condition; and 2 fatalities were thought to have been the result of exposure to cold water.

<sup>3</sup> The States' data provided information only on 32 children, including all 15 who were fatally injured. Information on the additional 19 nonfatally injured children was obtained from the Board's supplemental data form to the States.

<sup>4</sup> Of the five children who drowned and were wearing a PFD, three died from exposure to cold water (hypothermia), one was caught under water, and one slipped out of the PFD in cold water.

to the accidents indicates that of the 36 children who survived the accidents, 15 lives were saved because they were wearing a PFD.

The above data raise concern about the adequacy of current requirements regarding the carriage and use of PFDs on recreational boats. On November 9, 1992, the U.S. Coast Guard published a notice of proposed rulemaking (NPRM) in the Federal Register (57 FR 53410) on recreational boating safety equipment requirements. The Coast Guard proposes to change several Federal requirements and exemptions for carriage of PFDs on recreational vessels. Specifically, the rulemaking would eliminate the Type IV PFD as a primary PFD on recreational vessels less than 16 feet in length. Further, the rulemaking would eliminate Federal preemption of State boating safety laws related to PFD wearing or PFD carriage. Because current PFD carriage regulations allow use of a nonwearable Type IV PFD to meet carriage requirements for vessels under 16 feet in length, a State requirement to wear a PFD is preempted by Federal regulations because it implies a wearable PFD that is in conflict with Federal regulations. Under the rulemaking, a State would no longer be preempted from requiring that PFDs be worn. The proposed rulemaking would also remove the exemption from PFD carriage requirements for racing shells, rowing sculls, canoes and kayaks, sailboards, and personal watercraft. The Safety Board supports the NPRM.

In 1988, the NASBLA passed a resolution calling for the mandatory wearing of PFDs by all children younger than 12 years of age. Proponents of this resolution believed that requiring children to wear PFDs would eventually result in more adults wearing PFDs. To support this contention, statistics from the Scandinavian countries of Finland, Sweden, and Denmark were cited. In the mid- and late 1970s, the Scandinavian Aquatic Council recommended that all children 12 years old and younger who were participating in Council-sponsored activities and competitions wear PFDs. This recommendation became a requirement because of liability concerns and eventually resulted in local jurisdictions, lake associations, and marinas adopting a policy that all children 12 years old and younger were required to wear a PFD. Within the last 5 years, overall boating fatalities have decreased on the Scandinavian lakes, rivers, and bays. The Finnish Bureau of Aquatic Statistics and Lake Shore Patrol attribute this decrease, in part, to the increase in the number of adults now wearing PFDs because of the requirement to do so when they were younger.<sup>5</sup>

Despite the fact that States are preempted from requiring that PFDs be worn on boats less than 16 feet in length, some States have enacted such laws. The age requirements, however, vary from State to State and sometimes are linked to the size of vessel. The lack of age uniformity in the requirements may be confusing to

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<sup>5</sup> Ballestreri, S. 1992. Status of 12 and under since passage of 1988 [NASBLA] resolution. Paper presented at the 33rd annual NASBLA conference, October 4-8, 1992, Springfield, MO.

recreational boaters traveling throughout the States with children. More importantly, however, the requirements do not appear to be based on accident data or scientific research. According to the State boating law administrator in Florida, who favors a requirement for 12-year-olds and younger, the age of 6 was arbitrarily chosen by the State legislature, he believed, because it was close to 5, the age at which children are required to wear seatbelts. According to the boating law administrator in North Dakota, the age of 10 was a compromise between those who opposed any requirement and those who favored the age of 12. The NASBLA, on the other hand, supports its resolution to require children 12 years old and younger to wear PFDs by the fact that the age of 12 has repeatedly been linked to operator maturity by the marine community. It also references work by Ballestreri Consulting, Inc., that researched the physiological, emotional, and motor skill changes that occur around the age of 12.<sup>6</sup> The American Academy of Pediatrics (AAP) recommends that "your children should wear life jackets at all times when on or near the water."<sup>7</sup> The AAP embarked on a water safety campaign as a result of the high incidence of drownings among children. A policy statement on drowning is due this summer. The AAP does not, however, define "children" nor does it identify the specific ages at which a child needs to wear a "life jacket."

The enactment of laws to require children to wear PFDs has been somewhat successful, in part, the Safety Board believes, because the boating public can readily accept that it is dangerous for children not to wear PFDs. However, the accident data provided by the States forcefully points out that boating without a PFD is dangerous for boaters of all ages. The data indicate that of the 281 people who drowned in recreational boating accidents and were not wearing a PFD, as many as 85 percent (238 people) may have survived had they been wearing a PFD.<sup>8</sup> Requiring the use of PFDs for all recreational boaters, therefore, would appear to be the proper course of action for all States to take. The Centers for Disease Control, in an effort to reduce the number of drownings associated with recreational boating, has urged the States to require the wearing of PFDs. The Safety Board recognizes, however, that there would be strong opposition to an across-the-board law, that such a law would be difficult to enforce, and that PFDs may indeed not be necessary at all times, such as in certain areas of large recreational vessels.

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<sup>6</sup> Letter dated January 19, 1993, from S. Ballestreri to Safety Board staff.

<sup>7</sup> American Academy of Pediatrics. 1992. Life jackets and life preservers [pamphlet]. TIPP HEO 133. August.

<sup>8</sup> Although this estimate excludes the fatalities attributed to the possible effects of cold water exposure (hypothermia), being caught under water, or unconsciousness, it may be a liberal estimate of the number of lives saved by PFDs.

Nevertheless, given the number of lives that could have been saved in the accidents examined for the Safety Board study had PFDs been worn, the Board believes that it is incumbent on the States to increase the level of PFD usage. Based on the NPRM issued on November 9, 1992, it is clearly the intent of the Coast Guard to allow States to enact legislation that would require boaters to wear PFDs. Thus, the Coast Guard has recognized the safety benefits that would be derived from revising current regulations that preempt States from requiring the wearing of PFDs. The Safety Board looks forward to the Coast Guard's completion of this rulemaking process.<sup>9</sup> In the interim, the Safety Board believes that the States can begin the legislative process to increase the level of PFD usage. One approach to increase the level of PFD usage is to mandate PFD usage for persons involved in recreational boating activities or situations that are perceived by the boating public to be dangerous, similarly to how the public accepts that it is dangerous for children not to wear PFDs. Examples include water skiers, operators of personal watercraft, and persons operating in hazardous waters or operating a vessel alone. Of the 351 persons who drowned in the 407 fatal accidents, 338 persons drowned in single-vessel accidents. Of the 338 drownings, 96 victims (28 percent) were alone in their vessel at the time of the accident.

Other factors that States may need to consider include the types and conditions of recreational waters within the States' respective boundaries, such as cold recreational waters (waters with a temperature of 70 °F or less). Fifty-four percent of the accidents for which water temperature was recorded occurred in water temperatures of 70 °F or less. A person entering cold water experiences a sudden cold water shock reflex. This reflex causes a person to immediately gasp for air, which can result in water entering the lungs, reduced underwater breath-holding times, and hyperventilation with subsequent confusion and increased muscle tetany.<sup>10</sup>

Consideration should also be given to such factors as the types of recreational activities and the length and size of vessels. The States should study in detail existing accident data to determine where, when, and by whom PFD usage should be required. States need to consider that on certain sizes of vessels and during certain types of recreational activities, PFD usage may not be necessary and that there is a level of risk associated with many sporting activities, including recreational boating. For example, some people jump off their boats in warm waters and swim safely without wearing a PFD.

At a minimum, however, the Safety Board believes that children should be required to wear PFDs. The Safety Board also believes that requiring children to

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<sup>9</sup> At the time of this letter, it was anticipated that the final rule was imminent.

<sup>10</sup> Steinmen, Alan M.; Haywood, John S. 1989. Cold water immersion. In: Management of wilderness and environmental emergencies. St. Louis, MO: Mosbey Publishing Company.

wear PFDs will eventually result in more adults wearing PFDs, as occurred with the use of child safety seats and seatbelts for children.<sup>11</sup> However, given the various age limits that have been enacted by some of the States and apparently the lack of any scientific research to support the age limits chosen, the Safety Board believes that the Coast Guard and the NASBLA, in consultation with the American Academy of Pediatrics, should establish an age at or below which all children should be required by all States to wear PFDs while in recreational boats. The Safety Board further believes that the NASBLA members should then seek legislative action in their respective States that would require the wearing of PFDs, under conditions determined to be appropriate by the State, with a minimum requirement that all children wear PFDs.

The Safety Board acknowledges that enforcement of PFD usage has been and will continue to be difficult primarily because of the availability and accessibility of law enforcement officials and the number of these officials compared to the number of boaters. Programs similar to the BWI enforcement initiatives such as "Boat Block" and "SWAMP" may need to be implemented to target specific waterways. The NASBLA can play a role by working with the individual States to develop enforcement activities appropriate to the type of PFD requirements to be implemented by the States.

### **Boat Operating Knowledge and Skills**

Of the 451 operators involved in the 407 fatal accidents reported by the 18 States, information on whether the operators had attended any boating safety courses was provided for 230 of the operators. According to the data, 43 (19 percent) of the 230 operators had taken some type of boating safety course; 187 (81 percent) of the 230 operators had not.

Twenty States, the District of Columbia, and Puerto Rico have enacted legislation that establishes various requirements before a person is permitted to operate a recreational boat. For example, 11 States and the District of Columbia have requirements that are aimed at young boat operators operating the vessel without an adult present. Three additional States have adopted mandatory education

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<sup>11</sup> According to data from a National Highway Traffic Safety Administration (NHTSA) 19-city survey, seatbelt use has increased from about 16 percent for teenage drivers in 1985 to about 44 percent for teenage drivers in 1991. Also, use of seatbelts by subteens (5- to 12-year-olds) is increasing steadily. The NHTSA suggests that this is likely a function of the fact that many of these persons used child safety seats and seatbelts when they were younger and have developed the habit of buckling up. They may also have been influenced by public education efforts to promote seatbelt use. Further, the "follow the leader" effect has been evident in the child restraint area, where parents use seatbelts to serve as a role model for children who were in child safety seats.



requirements for all recreational boaters phased in over a specific time period.<sup>12</sup> In each of these States, a boat operator is issued a certificate that must be available for review by a law enforcement officer.

Only one State, New Jersey, has a requirement for a recreational boat operator's license. The law has been in effect since 1954 and applies only to operators of power vessels who are engaged in sports fishing on nontidal waters. Legislation that would require a boat operator's license has been introduced in the States of Florida, Louisiana, Maryland, and New Hampshire; however, no such legislation has yet been successfully enacted. Because these States have introduced legislation on this issue and other States have contemplated requiring a boat operator's license, the Law Enforcement Committee of the NASBLA approved in April 1992 the development of guidelines for a model operator licensing program. This issue is to be reviewed further by the Committee before being submitted to the full NASBLA membership for approval.

The accident data and case studies presented in the Safety Board's safety study strongly suggest that the individuals involved in fatal boating accidents operated their vessels in a manner that suggested a lack of basic knowledge of the rules of the road (that is, collisions, speed); a lack of understanding of safe boating practices (speed, alcohol, improper loading, inclement weather); and a lack of proficiency in operating skills (capsizings, collisions, weather).

Unlike general aviation and motor vehicle operations, an operator of a recreational boat is not required to demonstrate an understanding of the rules of the road or an ability to operate the vehicle. Further, the data do not show that recreational boating is a safer form of transportation than any other mode of transportation for which a demonstration of knowledge, skills, and ability is required prior to operating the equipment. However, no comprehensive program exists to determine that a boat operator has adequate knowledge and skills to safely operate a recreational vessel. Further, perhaps as few as 7 percent, and certainly no more than 22 percent, of first time boat operators will have taken some type of voluntary boating safety course. Moreover, successful completion of these courses indicates only that the persons who have taken them have a knowledge of basic boating safety rules; it does not indicate that these persons have demonstrated an ability to operate the vessel.

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<sup>12</sup> In Maryland, anyone born after July 1, 1972, must obtain a "Certificate of Boating Safety Education," to operate any type of vessel. In Vermont, anyone born after July 1, 1974, must obtain a safety certificate to operate a power boat. In Connecticut, a phased-in program exists in which by October 1, 1992, operators younger than 20 years old must have a certificate, and by October 1, 1997, all operators must have a certificate. Connecticut, Illinois, and Minnesota also require mandatory education for operators of personal watercraft.

With the one exception noted earlier in New Jersey, there is no requirement in the United States that a boat operator be licensed. A motor vehicle driver, for example, must obtain a license to operate the vehicle and to obtain the license must pass both a road test and a written test. Even motorcyclists must demonstrate, through testing, a knowledge of the rules of the road and the ability to operate the vehicle before receiving an endorsement to the motor vehicle license to operate a motorcycle. A boat operator, on the other hand, can rent or buy a vessel that can operate at speeds of 100 mph without demonstrating a knowledge of basic safety rules or skills in operating these sophisticated vessels. Although there are some boating advocates who would argue that most boaters would not attempt to operate such high-powered vessels without having received proper training and demonstrated an ability to operate these vessels, the Safety Board is concerned that this option exists. In fact, over 900 persons are killed each year in recreational boating accidents, more than are killed in any other type of marine accident or more than in rail and aviation accidents. Therefore, the Safety Board believes, as a minimum, that the States and the Territories should implement a program of minimum boating safety standards to reduce the number and severity of accidents. In addition to the PFD requirements addressed earlier in this report, such a program should consider requirements for recreational boat operators to demonstrate a knowledge of safe boating rules and an ability to operate the vessel. The requirement to possess a certificate of completion or an operator's license should also be considered as part of a comprehensive program.

The Safety Board further believes that the Coast Guard, in consultation with the NASBLA, should develop guidelines that would be used by the States to implement the minimum recreational boating safety standards. The guidelines could address, for example, the skills and knowledge necessary to demonstrate competency in operating different types of recreational boats. The Safety Board recognizes, if a State adopts such a requirement, the State may not want to require such demonstrations for some boats that fall under the category of recreational boats on some waterways. For example, high performance boats that operate at high speeds and larger vessels should probably require demonstration of knowledge and skills. However, small unpowered boats (or boats with low horsepower) may not warrant such a demonstration. Further, the level of competency needed may vary depending on the intended use of the vessel. For example, operating a canoe or kayak in white water may require a higher level of competency than operating the same vessel on warm, placid lakes. The Coast Guard and NASBLA should determine for which vessels and under what conditions it would be necessary to demonstrate an ability to operate the vessel. Because States may opt to require that boat operators demonstrate proficiency in boat handling skills and knowledge of boating rules, the Coast Guard and the NASBLA guidelines should address the methods by which this can be accomplished, such as through existing formal boating safety courses or self-teaching methods. Because testing may become an important component of the minimum boating safety standards, the Coast Guard and the NASBLA should

address the issue of how and where tests could be conducted. Finally, if the States opt to require a boat operator's license, the guidelines should address how the license could be issued and the period for which the license is valid. For example, an endorsement to the motor vehicle drivers license, for those boaters who have one, could be considered; such procedure would have the advantage of using an existing administrative structure.

The Safety Board recognizes that implementation of minimum boating safety standards will be a significant change in how the recreational boating industry has operated in the past and that extensive planning, organization, and public education will be needed to successfully implement such a program. The Safety Board believes, however, that an extensive new bureaucracy may not be necessary to implement this program. Every State, with the exception of Alaska, already has a centralized boat titling and registration authority. Currently, 19 States title and register recreational boats through a department of motor vehicles or other State taxing unit. Thirty States title and register boats through a marine law enforcement organization, such a department of natural resources, a parks and recreation division, or a fish and game commission. Administration of records and fees related to certification or licensing and notification of the new requirements related to the minimum boating safety standards could be accomplished through these existing organizations. Further, the NASBLA could serve the role of administering such a program.

Perhaps more importantly, the Safety Board believes that if States implement a boat operator licensing program, such a program will provide a more effective means of enforcing boating laws, so that those who have been operating boats unsafely can be identified, and steps taken to either improve their behavior or withdraw the boating privilege. Currently, marine law enforcement officials can suspend operating privileges; however, without a license, there is no mechanism to monitor boaters who have violated boating laws. The available data from the National Highway Traffic Safety Administration indicates that the suspension or revocation of a person's driving license, if found to be driving under the influence of alcohol or drugs, has proven to be a successful deterrent to this behavior. It is reasonable to believe that the suspension or revocation of a boating license would be an effective deterrent to boating while under the influence. Suspending or revoking a boating license could also prove effective in enforcing existing and future PFD laws.

Therefore, as a result of the safety study, the National Transportation Safety Board recommends that the National Association of State Boating Law Administrators:


Urge association members to seek legislative action that would require a chemical test to determine the alcohol concentration of a recreational boat operator involved in a fatal boating accident. (Class II, Priority Action) (M-93-7) (Supersedes M-83-73)

Cooperate with the U.S. Coast Guard and the American Academy of Pediatrics in developing a uniform component of standards that establishes an age at or below which all children should be required by all States to wear personal flotation devices while in recreational boats. (Class II, Priority Action) (M-93-8)

Cooperate with the U.S. Coast Guard in developing guidelines that would be used by the States to implement minimum recreational boating safety standards to reduce the number and severity of accidents; consider requirements such as mandatory use of personal flotation devices for children, demonstration of operator knowledge of safe boating rules and skills, and operator licensing. (Class II, Priority Action) (M-93-9)

Also as a result of the study, the Safety Board issued safety recommendations to the Governors of the 50 States, U.S. Virgin Islands, and Puerto Rico; the Mayor of the District of Columbia; the U.S. Coast Guard; the U.S. Department of the Army, Corps of Engineers; and the American Academy of Pediatrics.

Chairman VOGT, Vice Chairman COUGHLIN, and Members LAUBER, HART, and HAMMERSCHMIDT concurred in these recommendations.

By:   
Carl W. Vogt  
Chairman

cc: Lieutenant Colonel Charles Clark  
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